PD 42

Bedienungsanleitung	de
Operating instructions	en
Mode d'emploi	fr
Istruzioni d'uso	it
Manual de instrucciones	es
Manual de instruções	pt
Gebruiksaanwijzing	nl
Οδηγιες χρησεως	el
Kulllanma Talimatı	tr
دليل الاستعمال	ar

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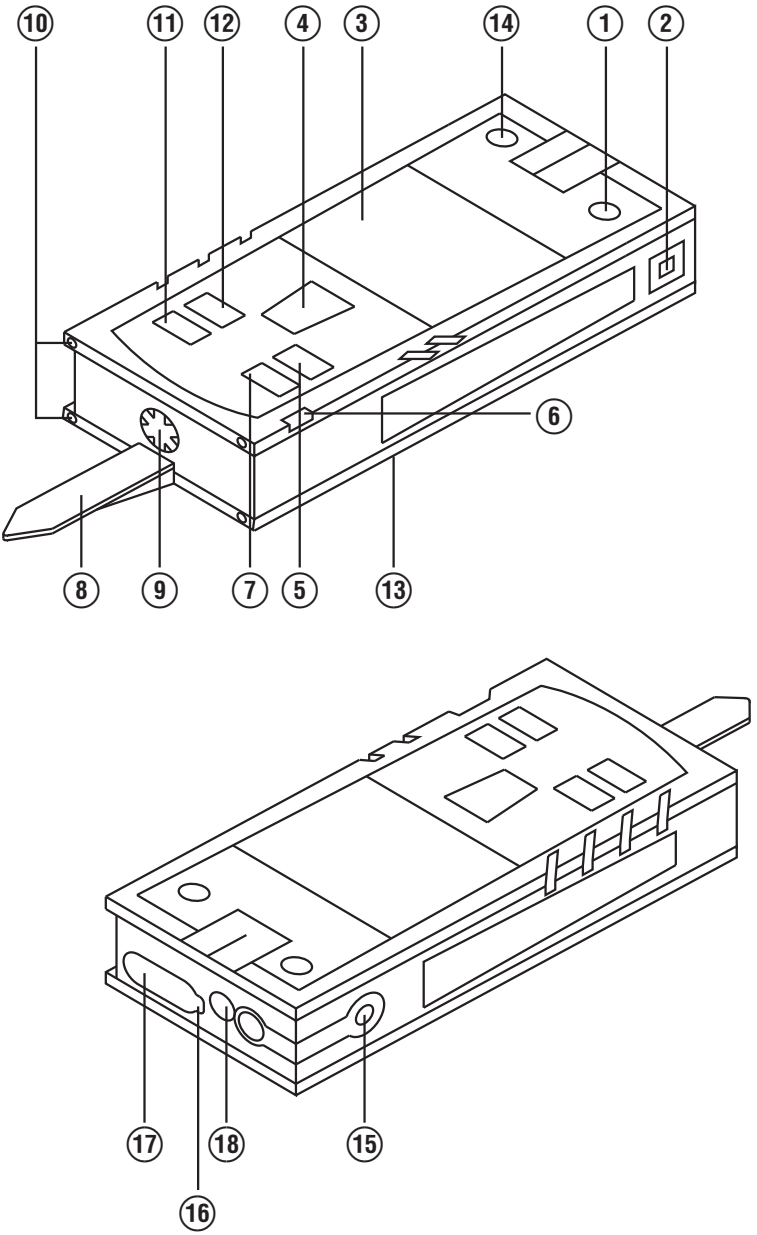

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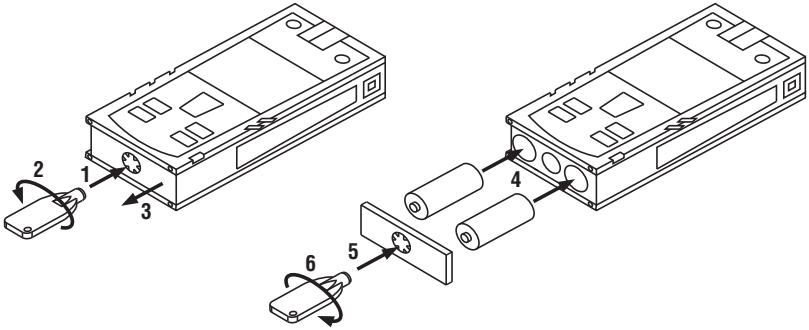

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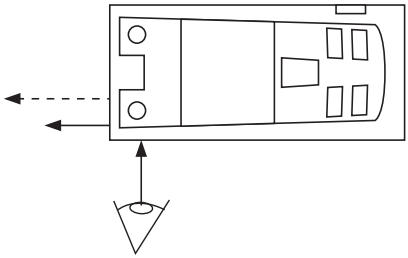

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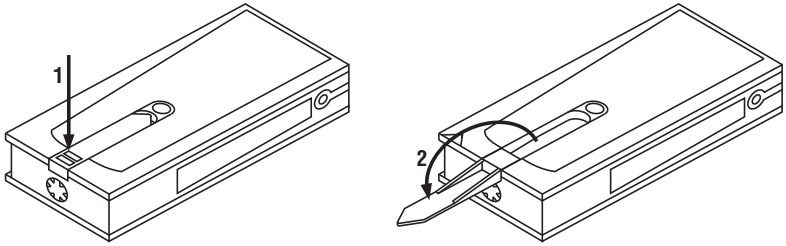

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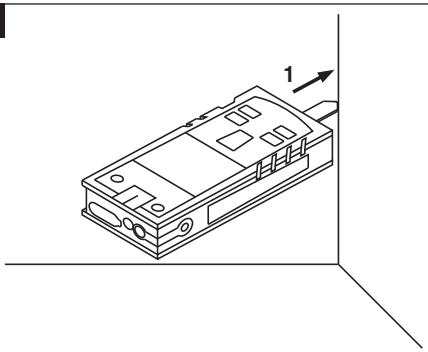

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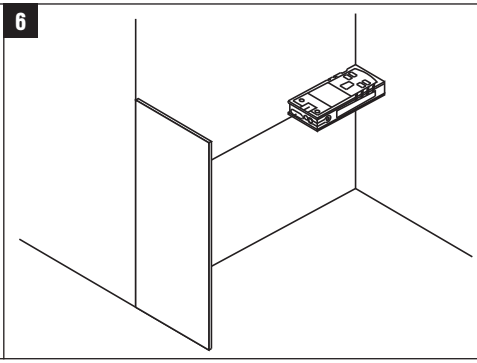

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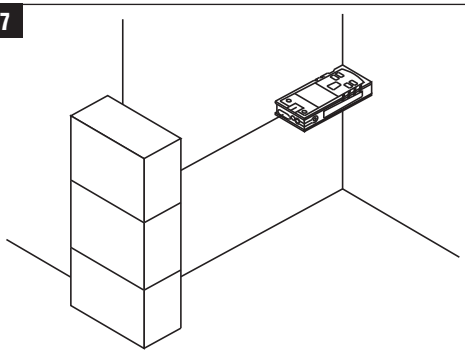

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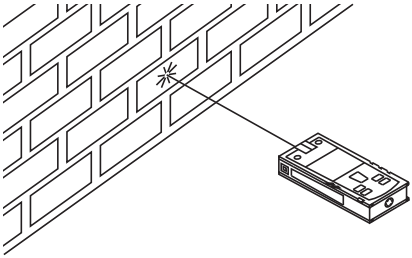

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ORIGINAL OPERATING INSTRUCTIONS

PD 42 laser range meter

It is essential that the operating instructions are read before the tool is operated for the first time.

Always keep these operating instructions together with the tool.

Ensure that the operating instructions are with the tool when it is given to other persons.

Contents		Page
1	General information	21
2	Description	22
3	Insert tools, accessories	25
4	Technical data	25
5	Safety instructions	26
6	Before use	27
7	Operation	31
8	Care and maintenance	37
9	Troubleshooting	38
10	Disposal	39
11	Manufacturer's warranty - tools	39
12	EC declaration of conformity (original)	40

1 These numbers refer to the corresponding illustrations. The illustrations can be found on the fold-out cover pages. Keep these pages open while studying the operating instructions.

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Parts, operating controls and indicators 1

① On/off button
② Side measure button
③ Graphic display
④ Measure button
⑤ Delete (clear) button
⑥ Horizontal bubble
⑦ FNC-button
⑧ Folding spike
⑨ 1/4" thread for PDA 71 measuring extension
⑩ Rear contact points
⑪ Minus button
⑫ Plus button
⑬ 1/4" thread on the underside
⑭ Reference button
⑮ Optical sight
⑯ Laser exit lens
⑰ Receiving lens
⑱ Vertical bubble

1 General information

1.1 Safety notices and their meaning

DANGER
Draws attention to imminent danger that will lead to serious bodily injury or fatality.

WARNING
Draws attention to a potentially dangerous situation that could lead to serious personal injury or fatality.

CAUTION
Draws attention to a potentially dangerous situation that could lead to slight personal injury or damage to the equipment or other property.

NOTE
Draws attention to an instruction or other useful information.

1.2 Explanation of the pictograms and other information

Warning signs

General warning

Symbols

Read the operating instructions before use.

Return waste material for recycling.

Laser class II according to CFR 21, § 1040 (FDA)

Laser Class 2 in accordance with IEC/EN 60825-1:2007

Do not look into the beam.

Temperature indicator

Battery status indicator

Hardware errors

Unfavorable operating conditions

KCC-REM-HLT-PD42

Location of identification data on the tool
The type designation and serial number can be found on the type identification plate on the tool. Make a note of this data in your operating instructions and always refer to it when making an enquiry to your Hilti representative or service department.

Type:

Serial no.:

2 Description

2.1 Use of the product as directed

The tool is designed for measuring distances, adding and subtracting distances and offers many practical functions such as a timer, area and volume measurement, min/max calculation, setting out, painter's area measurement, Pythagoras function and data memory.
Do not use the tool as a leveling tool.
Measurements taken from plastic foam materials such as polystyrene foam, from snow or from highly reflective surfaces (mirrors, glass, etc.) may produce inaccurate results.
The tool and its ancillary equipment may present hazards when used incorrectly by untrained personnel or when used not as directed.
Take the influences of the surrounding area into account. Do not use the appliance where there is a risk of fire or explosion.
Observe the information printed in the operating instructions concerning operation, care and maintenance.

To avoid the risk of injury, use only genuine Hilti accessories and additional equipment.
Modification of the tool is not permissible.

NOTE
Observe the permissible operating and storage temperatures.

2.2 Display

The measurements, settings and tool status are shown in the display. When the tool is in measuring mode, the measurements taken are shown at the bottom of the display area (the result line). When using a function, e.g. area measurement, the distances measured are shown in the intermediate result line and the calculated result is shown at the bottom of the display (the result line).

2.3 Display illumination

In low light conditions, the display is illuminated automatically as soon as a button is pressed. The display illumination intensity is reduced to 50% after 10 seconds. If no button is pressed over a period of 20 seconds, the display illumination switches off automatically.

NOTE
Illumination of the display consumes battery power. Shorter battery life is therefore to be expected when this feature is used frequently.

2.4 Basic principle

The distance is measured along a laser beam emitted by the tool to the point at which the beam strikes a reflective surface. The target from which the measurement is taken is clearly identified by the red laser measuring spot. The range of the tool depends on the reflectance and structure of the target surface from which measurements are taken.

2.5 Measuring principle

The tool emits a visible laser beam carrying signal pulses which are reflected by the target. The time between reflected pulses is used as a basis for determining the distance.
This measuring principle permits highly accurate and reliable measurement of distances to objects without need for special reflectors.

2.6 Standard measuring display mode

Standard measuring display mode is always activated when the “On/off” or “Measure” button is pressed to switch the tool on.

2.7 Symbols in the display

Temperature	Temperature too high (>+50°C) / too low (<-10°C).	Allow the tool to cool down or warm up.
Unfavorable conditions, poor signal	Insufficient reflected laser light.	Observe the minimum measuring distance (50 mm from the front edge of the tool); clean the lenses; take measurements from a different surface or use a target plate.
General hardware error	Switch the tool off and on again. If the fault persists, please contact Hilti Service.	

2.8 Control panel

Measure button	Activates the laser beam.
	Begins distance measurement.
	Activates continuous measuring mode (long press, approx. 2 sec.).
	Stops continuous measuring mode.
Plus button	Initiates distance, area and volume addition.
	Adds distances in standard measuring and painter’s measuring modes.
	Adds areas and volumes in the relevant modes.

Minus button	Initiates distance, area and volume subtraction.
	Subtracts distances in standard measuring and painter's measuring modes.
	Subtracts areas and volumes in the relevant modes.
FNC button	Always activates the previously used function.
	Press the button repeatedly to activate or select the functions one after the other (when no measurements have been taken).
	When measurements have already been taken: Deletes all measurements and restarts the function.
	Stops continuous measuring (tracking).
Delete (clear) button	The C-button has various functions depending on operating mode. Stops continuous measuring (tracking).
	Clears the standard measurement display.
	Clears the last measurement and returns to "Functions".
	Clears data memory (long press when data memory is displayed).
	Ends the function if no measurements have been taken.
On/off button	When the tool is switched off, press the button briefly to switch it on.
	When the tool is switched off, press and hold the button to activate the menu.
	When the tool is switched on, press the button briefly to switch it off.
Reference button	Switches between the various measuring reference points (front, tripod thread on the underside, rear).

2.9 Battery condition indicator

Number of segments shown	Charge status in %
4	= 100 % capacity
3	= 75 % capacity
2	= 50 % capacity
1	= 25 % capacity
0	Fully discharged

2.10 Items supplied as standard

1 PD 42 laser range meter
1 Hand strap
1 PDA 51 target plate
2 Batteries
1 Battery compartment key
1 Operating instructions
1 Manufacturer's certificate

2.11 PUA 60 laser visibility glasses

The laser visibility glasses have no protective function and thus do not protect the eyes from laser beams. As these glasses limit color vision they must not be worn by persons driving on a public road and must not be used to look directly into the sun.
The PUA 60 laser visibility glasses improve laser beam visibility considerably.

2.12 PDA 50 / 51 / 52 target plate

The PDA 50 target plate is made of durable plastic with a special reflective coating. Use of the target plate is recommended at distances greater than 10 m in poor light conditions.
The PDA 51 target plate has no reflective coating and its use is recommended in poor light conditions and at short distances. The PDA 52 target plate is equipped with the same reflective coating as the PDA 50 but is considerably larger in size (A4 format, 210 x 297 mm). This makes it much easier to aim the tool at the target plate over long distances.

NOTE
For reliable distance measurements, care should be taken to ensure that the laser beam strikes the target plate at right angles as far as possible. The laser spot on the target plate and the measuring reference point (starting point) may otherwise be in different planes (parallax error).

NOTE
When the target plate is used and very high accuracy is required, 1.2 mm should be added to the measurement obtained.

2.13 PDA 71 measuring extension

The measuring extension is made from aluminium and is equipped with a non-conductive plastic grip. The screw on the measuring extension should be screwed into the threaded bush on the rear contact surface of the PD 42. When the measuring extension is screwed onto the tool, the rear reference is then relocated to the tip of the measuring extension, i.e. the rear reference is extended by 1270 mm (50 inches).

3 Insert tools, accessories

Designation	Description
Target plate	PDA 50
Target plate	PDA 51
Target plate	PDA 52
Measuring extension	PDA 71

Designation	Description
Hand strap	PDA 60
Soft pouch	PDA 65
Laser visibility glasses	PUA 60

4 Technical data

Right of technical changes reserved.

Technical data	Values
Power supply	3V DC AA-size batteries
Battery condition check	Battery condition indicator with 4 segments showing 100%, 75%, 50%, 25% charge : No segments shown: The batteries are exhausted
Measuring range	0.05...200 m
Typical measuring range without target plate	Drywall panel, white: 100 m Concrete, dry: 70 m Brick, dry: 50 m
Accuracy	Typically ±1.0 mm for single and continuous measurement
Smallest unit displayed	1 mm

Technical data	Values
Beam diameter	Beam length 10 m: Max. 6 mm Beam length 50 m: Max. 30 mm Beam length 100 m: Max. 60 mm
Basic operating modes	Single measuring, continuous measuring, calculation/functions
Display	Illuminated dot-matrix display with permanent indication of operating mode and battery condition
Laser	Visible 635 nm, Output power less than 1 mW: Laser Class 2: IEC/EN 60825-1:2007; Laser Class II CFR 21 §1040 (FDA)
Optical sight	Side-mounted, with laser reference
Automatic cut-out	Laser: 1 min Tool: 10 min
Battery life	Max. number of measurements with laser beam switched on for a time of 10 s Alkaline 8,000... 10,000 NiMH 6,000...8,000
Operating temperature range	-10...+50°C
Storage temperature	-30...+70°C
Protection class (except battery compartment)	IP 54 protection against dust and water jets IEC 60529
Weight without batteries	170 g
Dimensions	120 mm x 55 mm x 28 mm

Menu / units	Distance	Area	Volume
m	Meters	m^2	m^3
cm	Centimeters	m^2	m^3
mm	Millimeters	m^2	m^3
In	Inches, decimal	$Inches^2$	$Inches^3$
In 1/8	1/8 inch	$Inches^2$	$Inches^3$
In 1/16	1/16 inch	$Inches^2$	$Inches^3$
In 1/32	1/32 inch	$Inches^2$	$Inches^3$
Ft	Feet, decimal	$Feet^2$	$Feet^3$
Ft 1/8	Feet-inches-1/8	$Feet^2$	$Feet^3$
Ft 1/16	Feet-inches-1/16	$Feet^2$	$Feet^3$
Ft 1/32	Feet-inches-1/32	$Feet^2$	$Feet^3$
Yd	Yards, decimal	$Yards^2$	$Yards^3$

5 Safety instructions

In addition to the information relevant to safety given in each of the sections of these operating instructions, the following points must be strictly observed at all times.

5.1 Basic information concerning safety

a) **Do not render safety devices ineffective and do not remove information and warning notices.**
b) **Keep laser tools out of reach of children.**
c) Failure to follow the correct procedures when opening the tool may cause emission of laser radiation in excess of class 2. **Have the tool repaired only at a Hilti service center.**
d) **Check that the tool functions correctly each time before use.**
e) **Operation of the tool in the proximity of pregnant women is not permissible.**
f) Measurements taken from surfaces with low reflectivity in highly reflective surroundings may be inaccurate.
g) Measurements taken through panes of glass or other objects may be inaccurate.

h) Rapid changes in the conditions under which the measurement is taken, e.g. persons walking through the laser beam, may lead to inaccurate results.
i) **Do not point the tool toward the sun or other powerful light sources.**

5.2 Proper organization of the workplace

a) **Avoid unfavorable body positions when working on ladders or scaffolding. Make sure you work from a safe stance and stay in balance at all times.**
b) **Check the measuring reference setting before taking the measurement.**
c) **When the tool is brought into a warm environment from very cold conditions, or vice-versa, allow it to become acclimatized before use.**
d) **As a precaution, check the previous settings and adjustments you have made.**
e) **When setting up the tool with the aid of the bubble level, view the bubble level at a slight angle.**
f) **Secure the area in which you are working and take care to avoid directing the beam towards other persons or towards yourself when setting up the tool.**
g) **Use the tool only within its specified limits.**
h) **Observe the accident prevention regulations applicable in your country.**

5.3 Electromagnetic compatibility

NOTE
Only for Korea: This device is suitable for the commercial and industrial field and the electromagnetic radiation encountered in this field (Class A). Users must pay attention to this point and not use this device in a residential environment.

Although the tool complies with the strict requirements of the applicable directives, Hilti cannot entirely rule out the possibility of the tool being subject to interference caused by powerful electromagnetic radiation, leading to incorrect operation. Check the accuracy of the tool by taking measurements by other means when working under such conditions or if you are unsure. Likewise, Hilti cannot rule out the possibility of interference with other devices (e.g. aircraft navigation equipment). The tool complies with the requirements of class A; The possibility of interference occurring in a domestic environment cannot be excluded.

5.4 General safety rules

a) **Check the condition of the tool before use. If the tool is found to be damaged, have it repaired at a Hilti service center.**
b) **The user must check the accuracy of the tool after it has been dropped or subjected to other mechanical stresses.**
c) **Although the tool is designed for the harsh conditions of jobsite use, as with other measuring instruments it should be treated with care.**
d) **Although the tool is protected to prevent entry of dampness, it should be wiped dry each time before being put away in its transport container.**

5.5 Electrical

a) **Keep the batteries out of reach of children.**
b) **Do not allow the batteries to overheat and do not expose them to fire.** The batteries may explode or release toxic substances.
c) **Do not charge the batteries.**
d) **Do not solder the batteries into the tool.**
e) **Do not discharge the batteries by short-circuiting.** This may cause them to overheat and present a risk of personal injury (burns).
f) **Do not attempt to open the batteries and do not subject them to excessive mechanical stress.**

5.6 Laser classification

Depending on the version purchased, the tool complies with Laser Class 2 in accordance with IEC825-1:2007 / EN60825-1:2007 and Class II in accordance with CFR 21 § 1040 (FDA). This tool may be used without need for further protective measures. The eyelid closure reflex protects the eyes when a person looks into the beam unintentionally for a brief moment. This eyelid closure reflex, however, may be negatively affected by medicines, alcohol or drugs. Nevertheless, as with the sun, one should not look directly into sources of bright light. Do not direct the laser beam toward persons.

5.7 Transport

Always remove the batteries before shipping the tool.

6 Before use

6.1 Inserting the batteries 2

CAUTION
Do not use damaged batteries.

CAUTION
Always replace the complete set of batteries.

DANGER
Do not mix old and new batteries. Do not mix batteries of different makes or types.

1. Unscrew the battery compartment cover from the rear of the tool.
2. Remove the batteries from the packaging and insert them in the tool.
   NOTE Take care to observe correct polarity (see symbols in battery compartment).
3. Check to ensure that the battery compartment cover is closed securely.

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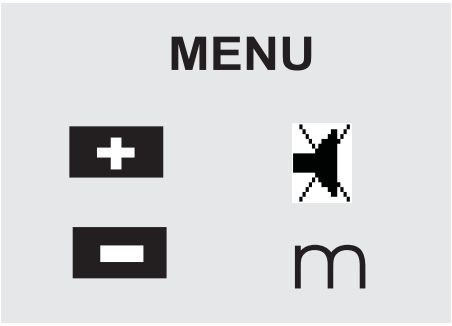
6.2 Switching the tool on / off

1. The tool can be switched on by pressing either the “On / off” button or the “Measure” button.
2. When the tool is switched off, press the “On / off” button: The tool switches on.
   The laser beam is switched off.
3. When the tool is switched on, press the “On / off” button: The tool switches off.
4. When the tool is switched off, press the “Measure” button: The tool and the laser beam switch on.

6.3 First distance measurements

1. Press the “Measure” button once.
   If switched off, the tool will be switched on and the laser beam activated.
   If the tool is already switched on, the laser beam will be activated.
2. Aim the tool by positioning the visible laser spot on a white surface at a distance of approx. 3 - 10 m.
3. Press the “Measure” button again.
   The distance will be displayed in less than a second, e.g. 5.489 m.
   You have just taken your first measurement with the tool.

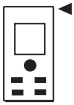
6.4 Settings menu



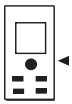
1. With the tool switched off, press the “On / off” button for approx. 2 seconds to enter menu mode.
2. Press the “Plus” button to switch the beep signal on or off.
3. Press the “Minus” button repeatedly to scroll through the choice of units.
4. Press the “On / off” button briefly to close the menu.
   The tool is switched off and all the settings shown will be saved.

6.5 Measuring references

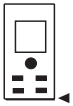
NOTE
The tool can take measurements from 5 different reference (contact) points. The “Reference” button on the top left on the front of the tool is used to switch between the front and rear references (front or rear edge of the tool). The reference is set automatically to the tip of the spike when the spike is folded out through 180°. When the measuring extension is screwed onto the tool at the rear (at the battery compartment), this is detected automatically by the tool and indicated by the long extension symbol in the display. The PDA 71 measuring extension can also be fitted to the underside of the tool, but is not detected automatically when in this position.



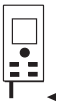
Front edge



Thread on underside



Rear edge



Spike

PDA 71 measuring extension screwed on at the rear

6.6 Optical sight 3

NOTE
The optical sight is useful when measuring distances greater than 10 meters.

The built-in optical sight is particularly helpful outdoors and in situations where the laser spot is otherwise difficult to see or no longer visible. With the aid of the optical sight,

the tool can be aimed accurately at targets even at great distance. When the tool is switched on, the laser spot can be seen in the optical sight. If the laser spot cannot be seen in the optical sight, either the measurement has been successfully completed or the laser beam has switched itself off after the corresponding time interval. The axis of the optical sight lies parallel to the axis of the laser beam.

1. Press the “Measure” button to switch the laser beam on and then aim the tool at the target.
2. Press the “Measure” button or the side “Measure” button and aim the tool at the target until the laser spot disappears from the optical sight.
   The distance is shown in the display.

6.7 Measuring distances

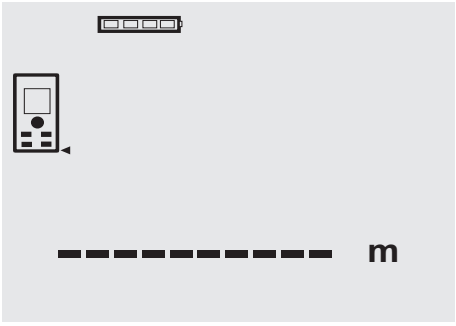
NOTE
When the spike is folded back in, the measuring reference is always reset to the rear edge of the tool irrespective of how far the spike was folded out or to which point on the tool the measuring reference was previously set.

Distances can be measured from all stationary targets without a highly reflective surface, i.e. concrete, stone, wood, plastic, paper, etc. The use of prisms or other highly reflective targets is not permissible and, if attempted, may falsify the results.

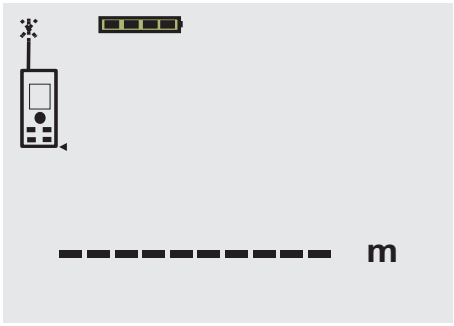
6.7.1 Measuring distances step by step

NOTE
The range meter measures distances in a very short time and simultaneously shows various information in the display.

Switch the tool on by pressing the “On / off” button.

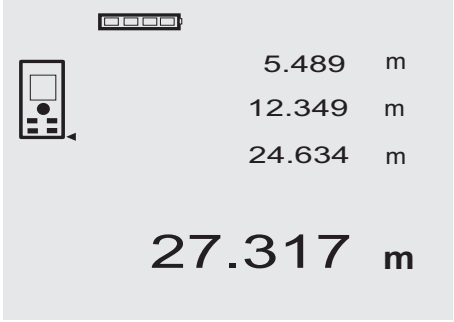


Press the “Measure” button once. The laser beam is switched on and is visible in the form of a spot on the target surface. This aiming mode is indicated in the display by a blinking laser symbol.



Aim at the target. Press the “Measure” button once again to measure the distance. The result usually appears in the result line in less than a second and the laser beam then switches off.

If further measurements are taken, up to three previously determined distances are shown in the intermediate result lines, i.e. a total of the last four measured distances are shown.



The tool can, of course, be switched on again at any time by pressing the “Measure” button. Pressing the C-button clears all currently displayed values.

6.7.2 Measuring modes

Distances can be measured using two different measuring modes, i.e. single distance measuring or continuous measuring. Continuous measuring mode is used for setting out given distances or lengths and can also be used where distance measurement is otherwise difficult, e.g. at corners, edges or in niches, etc.

6.7.2.1 Single distance measuring (“Measure” button)

1. Switch the laser beam on by pressing the “Measure” button.
2. Press the “Measure” button again.
   The measured distance will be shown in the result line at the bottom of the display in less than a second.

6.7.2.2 Single distance measuring (“On /off” button)

1. Switch the laser beam on by pressing the “On / off” button.
2. Press the “Measure” button to switch the laser beam on and then aim the tool at the target.
3. Press the “Measure” button again.
   The measured distance will be shown in the result line at the bottom of the display in less than a second.

6.7.2.3 Continuous measuring (tracking)

NOTE
Continuous measuring is possible in all situations where individual distances can be measured. This applies also to functions, such as areas.

1. Press the “Measure” button for about 2 seconds to activate the continuous measuring mode.
   NOTE When doing so, it doesn’t matter whether the tool or the laser beam is switched on or off. The tool will always switch to continuous measuring mode.
   During continuous measuring, distances are updated in the result line at the rate of approx. 6 - 10 measurements every second. The measuring rate depends on reflectivity of the target surface. If the beep signal is active, continuous measuring is indicated by a beep signal approx. 2 - 3 times per second.
2. Measuring is stopped by pressing the “Measure” button once again.
   The last valid measurement is then shown in the result line in the display.

6.7.3 Measuring from corners 4 5

The spike is used when measuring diagonally across rooms or from inaccessible corners.

1. Fold out the spike through 180°.
   The measuring reference is then set automatically to the end of the spike. The range meter takes the extended reference point into account and corrects the measured distances accordingly.
2. Position the range meter with the spike at the desired starting point for the measurement and aim toward the target.
3. Press the “Measure” button.
   The measured distance is shown in the display.

6.7.4 Measuring with the aid of target objects 6 7

When taking measurements to outside corners (e.g. on outside walls of buildings, perimeter fences, etc.), boards, bricks or other suitable objects can be held against the corner and used as the target. Use of the PDA 50, PDA 51 or PDA 52 target plate is recommended for long distances and in unfavorable light conditions, e.g. in strong sunlight.

6.7.5 Measuring in bright conditions

We recommend use of the PDA 50, PDA 51 or PDA 52 target plate for long distances and in very bright light conditions.

6.7.6 Taking measurements to rough surfaces 8

When measuring to rough surfaces, e.g. rough plaster etc., an average distance value is measured with the center of the laser spot weighted higher than the edges of the laser spot.

6.7.7 Taking measurements to curved or inclined surfaces

If the laser beam strikes the target surface at a very narrow angle, the light reflected may be inadequate. Conversely, too much light may be reflected toward the tool in situations where the laser beam strikes the target perpendicularly. We recommend use of the PDA 50, PDA 51 or PDA 52 target plate in both of these situations.

6.7.8 Taking measurements to wet or shiny surfaces

As long as the range meter can be aimed directly at the surface, the distance to the target will be reliably measured. With highly reflective surfaces, a reduction in range must be expected and the distance to the actual point of reflection may be measured.

6.7.9 Taking measurements to transparent surfaces

It is generally possible to measure distances to transparent or semi-transparent materials, e.g. liquids, polystyrene foam, etc. Light penetrates these materials, however, and measuring errors may therefore occur. Measuring errors may also occur when measurements are taken through glass or if objects are present within the line of the laser beam.

6.7.10 Measuring range

6.7.10.1 Increased range

The range of the tool is generally increased when measurements are taken in the dark, at dawn or dusk and when the target and/or the tool is shaded from bright light.
Use of the PDA 50, PDA 51 or PDA 52 target plate also increases the range of the tool.

6.7.10.2 Reduced measuring range

Measuring range may be reduced in bright conditions, e.g. in bright sunlight or when working under very powerful floodlights.

The range of the tool may be reduced when measurements are taken through glass or when objects lie within the path of the laser beam.
The range of the tool may be reduced when measurements are taken to mat green, blue or black surfaces or to wet or shiny surfaces.

7 Operation

NOTE
The direct control buttons are used for adding and subtracting distances. All other functions are activated by pressing the FNC-button.

7.1 Distance measurements

NOTE
With all functions of the tool, each step in the operation is always indicated in the display.

NOTE
Continuous measuring mode can be used with all functions in which individual distance measurement is possible.

NOTE
If measuring errors occur during continuous measuring, and continuous measuring mode is canceled by pressing the “Measure” button again, the last valid measurement will be displayed.

7.2 Adding distances

Individual distances can be conveniently added. This is useful, for example, for determining the total length of the inner face of door or window openings or for adding several individual distances that form a perimeter.

1. Press the “Measure” button (the laser beam will switch on).
2. Aim the range meter at the target.
3. Press the “Measure” button.
   The first distance will be measured and displayed (the laser then switches off).
4. Press the “Plus” button. The first distance is then displayed in the middle result line and a plus sign appears in the lower (intermediate) result line (the laser beam switches on).
5. Aim the range meter at the target.
6. Press the “Measure” button.
   The second distance is then measured and displayed in the lower (intermediate) result line. The result of the addition is shown in the result line.
   The current total of the distances is always shown in the result line.
   The procedure can be repeated until all distances have been added.
7. To terminate the addition of distances, simply measure a distance without first pressing the “Plus” button.
   All previous measuring and calculation results are shown in the intermediate results lines.
8. Press the C-button to clear the display.

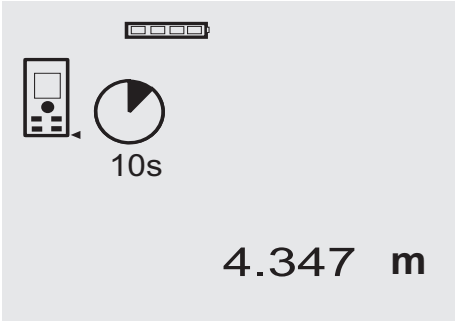
7.3 Subtracting distances

Individual distances can be conveniently subtracted from each other, e.g. in order to determine the distance between the underside of a pipe and the ceiling. This can be done by subtracting the distance between the floor and the underside of the pipe from the distance between the floor and the ceiling. If the pipe diameter is subtracted, the result is the distance between the top of the pipe and the ceiling.

1. Press the “Measure” button (the laser beam switches on).

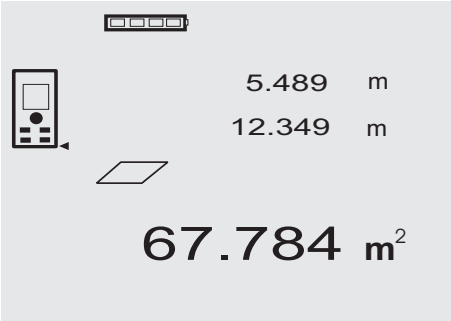
2. Aim the range meter at the target.
3. Press the “Measure” button. The first distance will be measured and displayed (the laser then switches off).
4. Press the “Minus” button. The first distance is then displayed in the middle result line and a minus sign appears in the lower (intermediate) result line (the laser beam switches on).
5. Aim the range meter at the target.
6. Press the “Measure” button.
   The second distance is then measured and displayed in the lower (intermediate) result line.
   The result of the subtraction is shown in the result line.
   The current difference in distance is always shown in the result line.
   The procedure can be repeated until all distances have been subtracted.
7. To terminate the subtraction of distances, simply measure a distance without first pressing the “Minus” button.
   All previous measuring and calculation results are shown in the intermediate results lines.
8. Press the C-button to clear the display.

7.4 Timer



The timer function works like the self-timer on a camera. The “Plus” and “Minus” buttons can be used to adjust the timer interval to one of the three settings: 5, 10 or 20 seconds. To activate the timer, press the “Measure” button. To stop the timer, press the C-button. A beep sound is emitted every second up to about 4 seconds before the timer triggers the tool. The last 4 seconds are counted down by a double beep every second.

7.5 Measuring areas

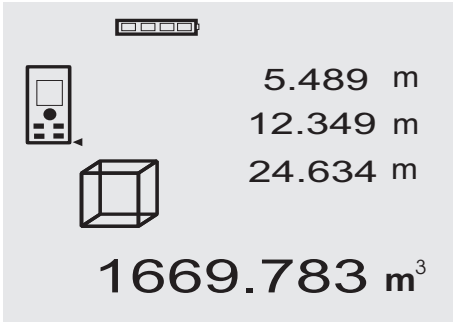


Each step of the area measurement operation is indicated graphically in the display. For example, to determine the floor area of a room, proceed as follows:

1. Press the FNC-button to activate the area function.
   NOTE When the area function is activated, the laser beam is already switched on.
2. Aim the range meter at the target.
3. Press the “Measure” button.
   The width of the room is measured and the value displayed.
   The graphic display automatically prompts you to measure the length of the room.
4. Aim the tool at the next target to obtain the length of the room.
5. Press the “Measure” button.
   The second distance is then measured, the area calculated immediately and the result is displayed in the result line.
   Both distances used for the area calculation are shown in the intermediate result lines and can be noted down conveniently at the end of the operation.

6. The C-button can be pressed at any time to stop the measuring operation. Each measurement can then be cleared, one after the other, and measuring restarted.
   NOTE If the C-button is pressed several times or the FNC-button is pressed, the function will be canceled or, respectively, restarted.
   NOTE If the second distance is measured using continuous measuring mode (tracking), the result of the area calculation is updated continuously. This allows parts of the area to be included/excluded.
   NOTE After calculation of an area, the “Plus” button can be pressed to add another area or, respectively, the “Minus” button used to subtract an area.

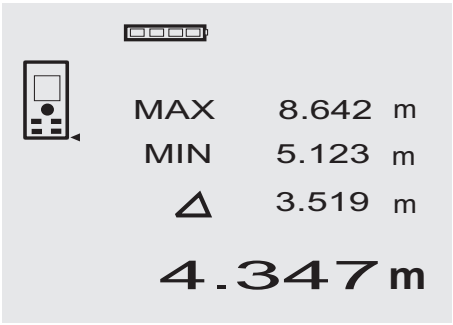
7.6 Measuring volumes



Each step of the volume measurement operation is indicated graphically in the display. For example, to determine the volume of a room, proceed as follows:

1. Press the FNC-button to activate the volume function. A volume can be determined in a single measuring operation.
   NOTE When the volume function is activated, the laser beam is already switched on.
2. Aim the range meter at the target.
3. Press the “Measure” button.
   The width of the room is measured and the value displayed.
4. The graphic display automatically prompts you to measure the length of the room.
5. Aim the tool at the next target to obtain the length of the room.
6. Press the “Measure” button.
   The length of the room is measured and the value displayed.
7. Press the “Measure” button.
8. Aim the tool at the next target to obtain the height of the room.
9. Press the “Measure” button.
   The volume is calculated and shown in the result line in the display as soon as the height of the room has been measured.
   All three distances used for the volume calculation are shown in the intermediate result lines and can be noted down conveniently at the end of the operation.
10. The C-button can be pressed at any time to stop the measuring operation. Each measurement can then be cleared, one after the other, and measuring restarted.
    NOTE If the C-button is pressed several times or the FNC-button is pressed, the function will be canceled or, respectively, restarted.
    NOTE If the third distance is measured using continuous measuring mode (tracking), the result of the volume calculation is updated continuously. This allows parts of the volume to be included/excluded.
    NOTE After calculation of a volume, the “Plus” button can be pressed to add another volume or, respectively, the “Minus” button used to subtract a volume.

7.7 Measuring using the “Min/max” function

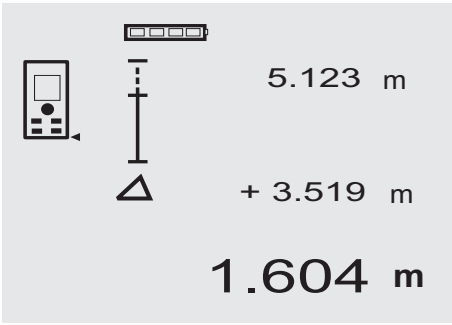


The “Maximum” function is used mainly to determine the length of diagonals, while the “Minimum” function is used to check parallels and set up objects parallel to each other, or to take measurements in situations where access is difficult. The “Maximum” function makes use of continuous measuring mode. The value shown in the display is updated whenever the measured distance increases. The “Minimum” function also makes use of continuous measuring mode. The value shown in the display is updated whenever the measured distance decreases. By combining the “Maximum” and “Minimum” functions, differences in distance can be determined very quickly, easily and reliably. The distance between a pipe and ceiling, or the distance between two objects even in inaccessible locations, can thus be easily and reliably determined.

1. Press the FNC-button to activate the “Min/max” function.
   NOTE When the “Min/max” function is activated, the laser beam is already switched on.
2. Aim the range meter at the target.
3. Press the “Measure” button.
   Continuous measuring then begins.
   The values shown in the MIN and MAX display areas are then updated whenever the measured distance increases or decreases.

4. Press the “Measure” button to stop measuring.
   The maximum distance, minimum distance and the difference between minimum and maximum are then shown in the display.
5. The C-button can be pressed at any time to stop the last measuring operation, clear the result and restart measuring.
   NOTE If the C-button is pressed several times or the FNC-button is pressed, the function will be canceled or, respectively, restarted.
   NOTE Further “Undo” steps are not possible. If the C-button is pressed several times or the FNC-button pressed once, the function will be canceled.

7.8 Measuring / setting out



The tool can be used to indicate given distances, e.g. when setting out and marking the position of drywall framing.

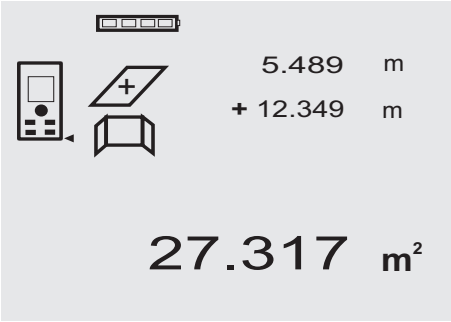
7.8.1 Setting out using a measured distance

1. Press the FNC-button to activate the “Setting out” function.
   NOTE When the “Setting out” function is activated, the laser beam is already switched on.
2. Aim the range meter at the target.
3. Press the “Measure” button.
   The initial distance, i.e. the distance to be transferred, is then measured and shown in the uppermost intermediate result line.
4. Press the “Measure” button.
   The tool begins measuring in continuous measuring mode.
   The difference between the currently measured distance (see result line) and the initial distance is shown in the lowest intermediate result line.
5. Move the tool back and forth until the difference shown is as close to zero as is required for your purpose.
6. The C-button can be pressed at any time to stop the last measuring operation, clear the result and restart measuring.
   NOTE Further “Undo” steps are not possible. If the C-button is pressed several times or the FNC-button pressed once, the function will be canceled.

7.8.2 Setting out given distances

1. Press the FNC-button to activate the “Setting out” function.
   NOTE When the “Setting out” function is activated, the laser beam is already switched on.
2. Enter the initial distance by pressing the “Plus” button.
   NOTE Pressing the “Plus” button briefly causes the last digit to change (increase) by 1. Pressing and holding the “Plus” button causes the digits to change at a faster rate. The longer the button is pressed, the faster the digits change. The “Minus” button functions in the same way as the “Plus” button, except that the digits decrease.
3. Press the “Measure” button.
   The tool begins measuring in continuous measuring mode.
   The difference between the currently measured distance (see result line) and the initial distance is shown in the lowest intermediate result line.
4. Move the tool back and forth until the difference shown is as close to zero as is required for your purpose.
5. The C-button can be pressed at any time to stop the last measuring operation, clear the result and restart measuring.
   NOTE Further “Undo” steps are not possible. If the C-button is pressed several times or the FNC-button pressed once, the function will be canceled.

7.9 Painter’s area



The painter’s area function is used, for example, to determine the surface area of the walls in a room. This is done by determining the total length of all walls and multiplying this figure by the height of the room.

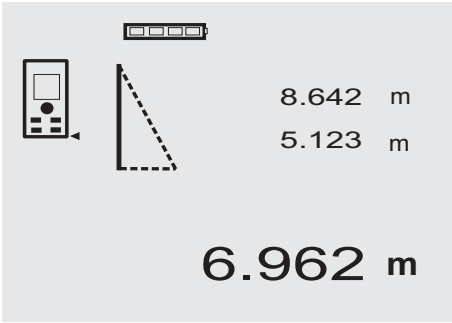
1. Press the FNC-button to activate the painter’s area function.
   NOTE When the painter’s area function is activated, the laser beam is already switched on.
2. Measure the length of the first wall.
   The length is shown in the top intermediate result line.

3. Press the “Plus” button and measure the next length. The sum of the two lengths is shown in the results line.
4. Press the “Plus” button again to make the tool ready to measure the next length.
   The total length is then displayed in the top intermediate result line.
5. Measure the third length and, if necessary, any further lengths.
6. Once all wall lengths have been added together, press the “Measure” button again after taking the last measurement and when the total of all measurements is shown in the result line at the bottom of the display.
   The total length is transferred to the top intermediate result line and a multiplication symbol is shown in the line below.
7. Now measure the height of the walls (= height of the room).
   The total wall area of the room is shown in the result line at the bottom of the display.
8. The C-button can be pressed at any time to stop the last measuring operation, clear the result and restart measuring.
   NOTE Further “Undo” steps are not possible. If the C-button is pressed several times or the FNC-button pressed once, the function will be canceled.
   NOTE The “Minus” button can be used to subtract certain distances, e.g. dimensions of windows or doors. The “Plus” and “Minus” buttons can be used alternately at any time.

7.10 Indirect measurements

A distance can be measured indirectly by taking several measurements and the result then calculated using the Pythagoras rule. The indirect measurement functions are accessed by pressing the FNC-button. Three functions are available for use:
The “Single Pythagoras” function using a triangle with two measured distances.
The “Double Pythagoras” function with 2 adjoining triangles.
The “Combined Pythagoras” function using 2 part triangles.
NOTE
A reduced level of accuracy, much lower than the level of accuracy of the tool itself, must generally be expected when the indirect measuring method is used. In order to obtain the best results, care must be taken regarding the geometry of the situation (i.e. right angles and triangle relationships). Best results are obtained when the tool is aimed carefully at the corners of the object, when all points are within the same plane and when the measurements are taken from a location not too far away from the object.

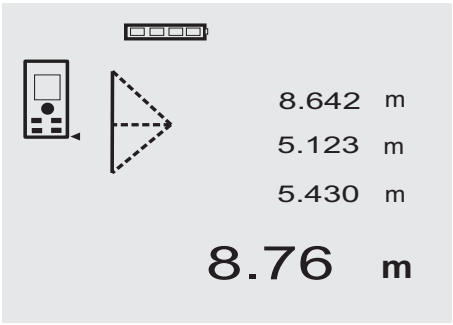
7.10.1 The “Single Pythagoras” method



Follow the symbols in the display. The blinking side of the triangle indicates the measurement to be taken. When the 2 required distances have been measured, the result is then calculated and shown in the result line in the lower area of the display.
1. Press the FNC-button to activate the “Single Pythagoras” function.
   NOTE When the “Single Pythagoras” function is activated, the laser beam is already switched on.
2. Aim the tool at the target as indicated by the symbol in the display.
   Press the “Measure” button.
3. The graphic display automatically prompts you to measure the shorter distance.
4. Aim the laser spot at the target and press the “Measure” button.
   NOTE Please note that this distance is measured in continuous measuring mode in order to ensure that the shortest distance to the target (at right angles) is measured reliably.
   When the second measurement has been taken, the tool then immediately calculates the opposite “indirect distance”.

   The system checks whether the geometric relationship allows a result to be calculated. An invalid result, due to inappropriate geometry, is indicated by the result line blinking (broken line). In this case, one or both of the distances must be remeasured.

7.10.2 The “Double Pythagoras” method

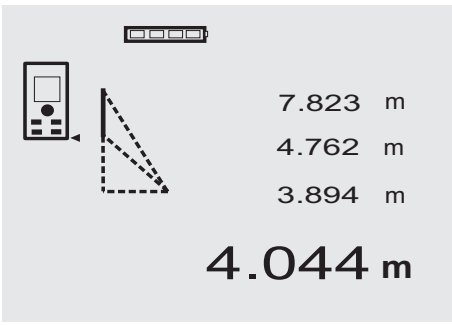


Follow the symbols in the display. The blinking side of the triangle indicates the measurement to be taken. When the 3 required distances have been measured, the result is then calculated and shown in the result line at the bottom of the display.

1. Press the FNC-button to activate the “Double Pythagoras” function.
   NOTE When the “Double Pythagoras” function is activated, the laser beam is already switched on.
2. Aim the tool at the target as indicated by the symbol in the display.
   Press the “Measure” button.
3. The graphic display automatically prompts you to measure the middle distance.
   NOTE Please note that this distance is measured in continuous measuring mode in order to ensure that the shortest distance to the target (at right angles) is measured reliably.
4. Sweep the laser spot slowly over the target at the point where the distance is shortest and then stop measuring by pressing the “Measure” button.
   After the last distance has been measured, the tool immediately calculates the opposite “indirect distance”.

   The system checks whether the geometric relationship allows a result to be calculated. An invalid result, due to inappropriate geometry, is indicated by the result line blinking (broken line). In this case, one or more of the distances must be remeasured.

7.10.3 The “Combined Pythagoras” method

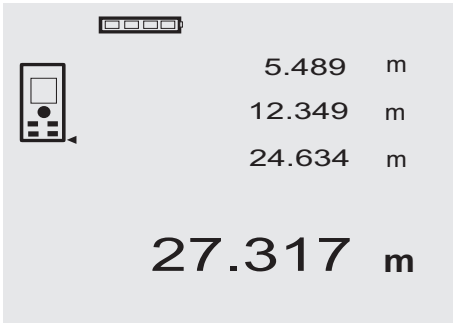


Follow the symbols in the display. The blinking side of the triangle indicates the measurement to be taken. When the 3 required distances have been measured, the result is then calculated and shown in the result line at the bottom of the display.

1. Press the FNC-button to activate the “Combined Pythagoras” function.
   NOTE When the “Combined Pythagoras” function is activated, the laser beam is already switched on.
2. Aim the tool at the target as indicated by the symbol in the display.
   Press the “Measure” button.
3. The graphic display automatically prompts you to measure the middle distance.
4. The graphic display prompts you to measure the last distance.
   NOTE Please note that this distance is measured in continuous measuring mode in order to ensure that the shortest distance to the target (at right angles) is measured reliably.
   After the last distance has been measured, the tool immediately calculates the opposite “indirect distance”.

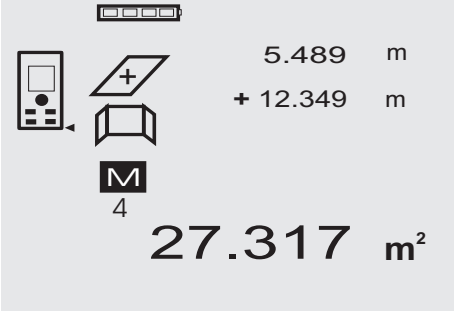
   The system checks whether the geometric relationship allows a result to be calculated. An invalid result, due to inappropriate geometry, is indicated by the result line blinking (broken line). In this case, one or more of the distances must be remeasured.

7.11 Saving the current measurement



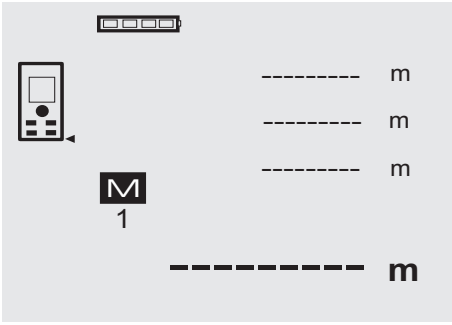
If several distance measurements have been taken, up to 3 previous measurements are shown in the intermediate result lines in the standard display, i.e. in total, the 4 previous measurements are shown and saved. The last measurement taken is shown in the lowest line of the display.

7.12 Data memory



The tool saves measurements and the results of calculations continuously while in operation. A total of up to 30 values, including graphic symbols, are saved in this way. The complete set of information displayed is saved in the following situations:
A function provides a valid result when:
A valid distance is measured and shown in the standard display:
Distances are added using the “Plus” button – the last total is saved in each case.
Distances are subtracted using the “Minus” button – the last total is saved in each case.
NOTE
When data memory is already filled with the 30 previous sets of displayed data, the “oldest” set of data is deleted when a new set of displayed data is saved.

7.12.1 Clearing data memory



Data memory can be completely cleared by pressing the C-button for approx. 2 seconds while data memory is displayed.

8 Care and maintenance

8.1 Cleaning and drying

1. Blow dust off the lenses.
2. Do not touch the glass or the filter with the fingers.
3. Use only a clean, soft cloth for cleaning. If necessary, moisten the cloth slightly with pure alcohol or a little water.
   NOTE Do not use any other liquids as these may damage the plastic components.
4. The temperature limits for storage of your equipment must be observed, especially in winter / summer.

8.2 Storage

Remove the tool from its case if it has become wet. The tool, its carrying case and accessories should be cleaned and dried (at maximum 40°C / 104°F). Repack the equipment only once it is completely dry.

Check the accuracy of the equipment before it is used after a long period of storage or transportation.
Remove the batteries from the tool before storing it for a long period. Leaking batteries may damage the tool.

8.3 Transport

Use the Hilti toolbox or packaging of equivalent quality for transporting or shipping your equipment.
CAUTION
Always remove the batteries before shipping the tool.

8.4 Calibration and adjustment

8.4.1 Calibration

Monitoring of measuring equipment for users certified in accordance with ISO 900X: As specified in ISO 900X, you

may carry out the inspection and testing of the PD 42 laser range meter yourself (see ISO 17123-4: Field Process for Accuracy Examination of Geodetic Instruments: Part 6, Close-range Opto-electrical Range Meters).

1. Select a readily accessible measuring distance of a known length (approx. 1 to 5 meters / 3 to 15 feet) which does not change over time and measure the same distance 10 times.
2. Determine the mean deviation from the known distance. This value should be within the specified accuracy tolerance for the tool.
3. Keep a record of this value and note the date when the next test is due.
   Repeat this test at regular intervals as well as before and after important measuring tasks.
   Apply a test and inspection confirmation sticker to the PD 42 and keep a record of the entire monitoring, test and inspection procedure and the results.
   Please refer to the technical data contained in the operating instructions and the information concerning measuring accuracy.

8.4.2 Adjustment

To ensure that the laser range meter is adjusted correctly, we recommend that it is returned to a Hilti Service Center for calibration. Accurate adjustment of the tool will be confirmed by a calibration certificate.

8.4.3 Hilti calibration service

We recommend that the tool is checked by the Hilti calibration service at regular intervals in order to verify its reliability in accordance with standards and legal requirements.
Use can be made of the Hilti calibration service at any time, but checking at least once a year is recommended.
The calibration service provides confirmation that the tool is in conformance, on the day it is tested, with the specifications given in the operating instructions.
The tool will be readjusted if deviations from the manufacturer's specification are found. After checking and adjustment, a calibration sticker applied to the tool and a calibration certificate provide written verification that the tool operates in accordance with the manufacturer's specification.
Calibration certificates are always required by companies certified according to ISO 900x.
Your local Hilti Center or representative will be pleased to provide further information.

9 Troubleshooting

Fault	Possible cause	Remedy
The tool can't be switched on.	The batteries are exhausted.	Replace the batteries.
	Incorrect battery polarity.	Insert the batteries correctly and close the battery compartment cover.
	The button is faulty.	Return the tool to Hilti for repair.
No distances displayed by the tool.	"Measure" button was not pressed.	Press the "Measure" button.
	Faulty display.	Return the tool to Hilti for repair.
Frequent error messages or the tool doesn't measure.	The target surface is too brightly lit by the sun.	Measure from the other direction – sun from behind.
	The target surface is too shiny.	Take measurements from less shiny surfaces.
	The target surface is too dark.	Use the PDA 50/ PDA 51/ PDA 52 target plate.
	Bright sunlight towards the tool.	Use the PDA 50/ PDA 51/ PDA 52 target plate.
Measuring reference not set to the spike.	The spike is not folded out fully.	Fold the spike out fully.
	The spike is faulty.	Return the tool to Hilti for repair.
Measuring reference not set to the extension.	The measuring extension is not screwed in fully.	Screw the measuring extension in fully.
	Dirt or foreign matter in the threaded bush.	Clean the threaded bush.
No result obtained using Pythagoras function.	A distance is missing.	Measure the missing distance(s).
	The difference between the distances is insufficient.	The distance to be calculated should be greater than ¼ of the distances measured.

Fault	Possible cause	Remedy
No result obtained using Pythagoras function.	The result cannot be calculated (geometry incorrect).	Move as close as possible to the object to be measured. Triangles are possibly too small.
No result obtained using functions.	Distance measurements are missing.	Measure the missing distance(s).
	Numerical value of the result is too high (cannot be displayed).	Change to a larger unit.

10 Disposal

WARNING
Improper disposal of the equipment may have serious consequences:
The burning of plastic components generates toxic fumes which may present a health hazard.
Batteries may explode if damaged or exposed to very high temperatures, causing poisoning, burns, acid burns or environmental pollution.
Careless disposal may permit unauthorized and improper use of the equipment. This may result in serious personal injury, injury to third parties and pollution of the environment.

Most of the materials from which Hilti tools or appliances are manufactured can be recycled. The materials must be correctly separated before they can be recycled. In many countries, Hilti has already made arrangements for taking back old tools and appliances for recycling. Ask Hilti customer service or your Hilti representative for further information.

For EC countries only

Disposal of electric tools together with household waste is not permissible.

In observance of the European Directive on waste electrical and electronic equipment and its implementation in accordance with national law, electrical appliances that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

Dispose of the batteries in accordance with national regulations.

11 Manufacturer's warranty - tools

Hilti warrants that the tool supplied is free of defects in material and workmanship. This warranty is valid so long as the tool is operated and handled correctly, cleaned and serviced properly and in accordance with the Hilti Operating Instructions, and the technical system is maintained. This means that only original Hilti consumables, components and spare parts may be used in the tool.

This warranty provides the free-of-charge repair or replacement of defective parts only over the entire lifespan of the tool. Parts requiring repair or replacement as a result of normal wear and tear are not covered by this warranty.

Additional claims are excluded, unless stringent national rules prohibit such exclusion. In particular, Hilti is not obligated for direct, indirect, incidental or consequential damages, losses or expenses in connection with, or by reason of, the use of, or inability to use the tool for any purpose. Implied warranties of merchantability or fitness for a particular purpose are specifically excluded.

For repair or replacement, send the tool or related parts immediately upon discovery of the defect to the address of the local Hilti marketing organization provided.

This constitutes Hilti's entire obligation with regard to warranty and supersedes all prior or contemporaneous comments and oral or written agreements concerning warranties.

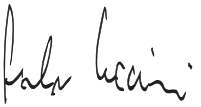
12 EC declaration of conformity (original)

Designation:	Laser range meter
Type:	PD 42
Year of design:	2006

en

We declare, on our sole responsibility, that this product complies with the following directives and standards: 2006/95/EC, 2004/108/EC, 2011/65/EU, EN ISO 12100.

Hilti Corporation, Feldkircherstrasse 100, FL-9494 Schaan



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